L-852G RUNWAY GUARD LIGHT

Installation and Maintenance Manual

ETL Certified to FAA Specifications
AC 150/5345-46E
and FAA LED Performance Specifications per Engineering Brief 67D
ICAO Annex 14, Vol 1, para. 5.3.23

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## Record Of Changes

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<th>Date</th>
<th>Change Description</th>
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<td>-</td>
<td>1/23/2017</td>
<td>ECO# 22308</td>
<td>S. BASTIANI</td>
</tr>
<tr>
<td>A</td>
<td>8/23/2017</td>
<td>ECO# 22571</td>
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<tr>
<td>B</td>
<td>3/01/2018</td>
<td>ECO# 22943</td>
<td>S. BASTIANI</td>
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Warranty

Astronics DME warrants products against mechanical, electrical, physical, and workmanship defects for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first.

This warranty, excludes consumable items such as batteries, filters, or lamps.

Astronics DME will repair or replace, at its option, equipment or parts, which fail because of mechanical, electrical, physical, or workmanship defects, provided the equipment or parts were installed operated or maintained in accordance with approved practice, and used for the intended purpose. Any product which has been repaired or altered in such way, in Astronics DME’s judgment, as to affect the product adversely will not be covered under warranty.

Astronics DME reserves the right to examine the part(s) to determine if the equipment/part(s) is/are covered under this warranty or to authorize scrap on site and provide replacement parts without examination by Astronics DME Customer Product Support.

Astronics DME shall have the right to substitute replacement parts having the same form, fit, function, and specification.

All repaired or overhauled parts will be warranted to be free from defect in material and workmanship, in accordance with the above stipulations, for a period of ninety (90) days from the date of shipment.

For products not manufactured by, but sold by Astronics DME, warranty is limited to that extended by the original manufacturer.

Customers must notify Astronics DME Customer Product Support (CPS) in writing within ten (10) working days of the failure/defect discovery with a detailed description of the problem and, if known, the cause of the problem.

In accordance with FAA requirements, Astronics DME warrants LED airfield lighting products against electrical defects for a period of four years from the date of installation.

Customers must obtain a Return Material Authorization (RMA) Number (and identify equipment with this number before returning material) from:

Astronics DME Customer Product Support
6830 NW 16th Terrace, Fort Lauderdale, FL 33309
DMEsupport@astronics.com
(954) 975-2206

* Astronics DME’s Customer assumes responsibility for incoming freight and custom charges unless these have been previously authorized in writing by Astronics DME.*
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1. SAFETY

1.1 Introduction

This section contains general safety instructions. Some safety instructions may not apply to the equipment in this manual. Specific warnings are included in the manual where appropriate. Follow all warnings, cautions and notes in the instructions carefully as failure to do so may result in personal injury, death, or damage to equipment.

To use this equipment safely

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. Always remove power prior to making any wire connections and touching any parts.
- Read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- Read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- Keep this manual within easy access of personnel installing, operating, maintaining, or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used.

1.2 Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or damage to equipment.

**WARNING** May result in personnel injury or death.
1.3 Qualified Personnel

Defined as personnel who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment.

1.4 Intended Use

Astronics DME is not responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or equipment damage.

Unintended uses may result from taking the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Astronics DME replacement parts.

- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards

- Allowing unqualified personnel to perform any task.

1.5 Installation

Read and understand the installation section of all system component manuals before installing the equipment.

- Failure to follow safety procedures may result in injury or death.

- Allow only qualified personnel to install the equipment.

- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.

- Make sure all equipment is rated and approved for the environment in which you are using it.

- Follow all instructions for installing components and accessories.
• Install all electrical connections to local code.

• Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.

• Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.

1.6 Operation

Only qualified personnel should operate this equipment. Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

• Before using this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.

• Never operate equipment with a known malfunction.

• Do not attempt to operate or service electrical equipment if standing water is present.

• Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.

• DO NOT touch exposed electrical connections on equipment while the power is ON.

1.7 Equipment Malfunctions

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

• Disconnect and lock out electrical power.

• Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.
1.8 Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only properly trained personnel are permitted to service this equipment.

- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Astronics DME replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.
2. DESCRIPTION

2.1 Introduction

This section describes the Astronics DME Light Emitting Diode (LED) L-852G In-Pavement Runway Guard Light.

2.2 Equipment Description

The intended use of the L-852G LED Runway Guard Light is shown in Table 2-1.

<table>
<thead>
<tr>
<th>Table 2-1 L-852G Runway Guard Light Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-852G</td>
</tr>
</tbody>
</table>

These lights are:

- Class 2 (Base-mounted fixtures)
- Mode 1 (Constant Current fixture, supplied 6.6 amperes (A))
- Style 3 (The style designation applies only to in-pavement fixtures and describes the total height above finished grade (X) where X ≤ 1/4 inch.)
- Certified by Intertek Testing Services according to FAA specification AC 150/5345-46E, FAA LED specifications EB67D
- Meets the requirements of Low Visibility Taxiway Lighting Systems as specified by FAA AC 150/5340-30.
- Compliant with ICAO Annex 14, Vol 1, para. 5.3.23 aerodromes.

The Astronics DME L-852G LED Runway Guard Light is shown in Figure 2-1.
Figure 2-1 L-852G LED Runway Guard Light

The major components of the L-852G LED Runway Guard Light are shown in Figure 2-1 and Figure 8-1.
2.3 Equipment Specification Data

Table 2-2 through Table 2-9 illustrates pertinent reference data on the L-852G LED Runway Guard Light. Included are tables containing functional characteristics, external power requirements, environmental characteristics, equipment and accessories supplied, and equipment required for operation and maintenance, but not supplied by Astronics DME.

2.3.1 Functional Characteristics

Table 2-2 thru Table 2-4 lists the functional characteristics of the L-852G LED Runway Guard Light.

### Table 2-2 Functional Characteristics (VA/PF) – No Arctic Kit

<table>
<thead>
<tr>
<th>Fixture Type</th>
<th>VA</th>
<th>PF</th>
</tr>
</thead>
<tbody>
<tr>
<td>852G UNI</td>
<td>65</td>
<td>0.77</td>
</tr>
</tbody>
</table>

### Table 2-3 Functional Characteristics (VA/PF) – Arctic Kit

<table>
<thead>
<tr>
<th>Fixture Type</th>
<th>VA</th>
<th>PF</th>
</tr>
</thead>
<tbody>
<tr>
<td>852G UNI</td>
<td>97</td>
<td>0.97</td>
</tr>
</tbody>
</table>

### Table 2-4 Functional Characteristics

<table>
<thead>
<tr>
<th>Condition</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optics</td>
<td>8 high power Yellow LEDs with optically matched polycarbonate lens</td>
</tr>
<tr>
<td>852G</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>~ 10.2 lbs.</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Height (Depth)</td>
<td>3.93 inches</td>
</tr>
<tr>
<td>Outer Diameter</td>
<td>11.94 inches</td>
</tr>
<tr>
<td>Bolt-Circle Diameter</td>
<td>11.25</td>
</tr>
<tr>
<td>Total Harmonic Distortion</td>
<td>&lt; 1.1%</td>
</tr>
<tr>
<td>Arctic Kit</td>
<td>Optional - Turns on at ~0 °C and turns off at ~25 °C</td>
</tr>
</tbody>
</table>
2.3.2 Photometric Data

Table 2-5 lists the photometric data requirements for the L-852G LED Runway Guard Light.

### Table 2-5 Photometric Data L-852G

<table>
<thead>
<tr>
<th>Color</th>
<th>Light Source</th>
<th>Degrees</th>
<th>Candelas</th>
</tr>
</thead>
</table>
| Yellow  | LED          | Main Beam 0.2 to 9 Vertically (Avg)  
±5 Horizontally (Avg)  
10% Beam -4 to 13 Vertically (Avg)  
±7 Horizontally (Avg) | 1,000    |

### Table 2-6 3 or 5 Step CCR

<table>
<thead>
<tr>
<th>CCR Current (amps)</th>
<th>Average Brightness Level (candels)</th>
<th>% of Max. Brightness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G (Yellow)</td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>1000</td>
<td>100%</td>
</tr>
<tr>
<td>5.5</td>
<td>405</td>
<td>40.5% (FAA Requirement 30 - 51)</td>
</tr>
<tr>
<td>5.2</td>
<td>350</td>
<td>35% (FAA Requirement 25 - 45)</td>
</tr>
<tr>
<td>4.8</td>
<td>145</td>
<td>14.5% (FAA Requirement 10 - 19)</td>
</tr>
<tr>
<td>4.1</td>
<td>75</td>
<td>7.5% (FAA Requirement 5 - 10)</td>
</tr>
<tr>
<td>3.4</td>
<td>21</td>
<td>2.1% (FAA Requirement 1.2 - 3)</td>
</tr>
<tr>
<td>2.8</td>
<td>9</td>
<td>0.9% (FAA Requirement 0.15 - 1.65)</td>
</tr>
</tbody>
</table>
2.3.3 External Power Requirements

Table 2-7 lists the external power requirements of the L-852G LED Runway Guard Light.

<table>
<thead>
<tr>
<th>Input</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant Current Regulator (CCR)</td>
<td>3 Step 4.8A, 5.5A or 6.6A</td>
</tr>
<tr>
<td></td>
<td>5 Step 2.8A, 3.4A, 4.1A, 5.2A and 6.6A</td>
</tr>
</tbody>
</table>

2.3.4 Environmental Characteristics

Table 2-8 lists the environmental characteristics of the L-852G LED Runway Guard Light.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>-40 °C to +55 °C (-40 °F to +131 °F)</td>
</tr>
<tr>
<td>Storage/Shipping</td>
<td>-55 °C to +55 °C (-67 °F to 131 °F)</td>
</tr>
<tr>
<td>Temperature Shock</td>
<td>Withstands exposure of the hot light fixture to cold water spray</td>
</tr>
<tr>
<td>Salt fog</td>
<td>Withstands exposure to a corrosive salt atmosphere</td>
</tr>
<tr>
<td>Wind</td>
<td>N/A</td>
</tr>
<tr>
<td>Altitude</td>
<td>Sea level to 10,000 feet (3000 m)</td>
</tr>
<tr>
<td>Precipitation</td>
<td>Withstands exposure to rain, snow, ice, and standing water</td>
</tr>
<tr>
<td>Solar radiation</td>
<td>Withstands exposure to solar radiation</td>
</tr>
</tbody>
</table>
2.3.6 Equipment and Accessories Supplied

Table 2-9 lists the mechanical characteristics of the L-852G LED Runway Guard Light.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Pavement Lights - Top Surface Slope</td>
<td>The slope of the top surface of the light fixture, which protrudes above finish grade, is less than 8 degrees (recesses excepted).</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Resistance of 50 meg-ohms lead-to-case</td>
</tr>
</tbody>
</table>

Table 2-10 lists the equipment and accessories supplied for the L-852G LED Runway Guard Light.

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-852G LED Runway Guard Light</td>
<td>As Required</td>
</tr>
<tr>
<td>Installation and Maintenance Manual - Y3-01-0183</td>
<td>Manual can be downloaded at <a href="http://www.astronics.com">www.astronics.com</a></td>
</tr>
</tbody>
</table>
2.3.7 Equipment Required - Not Supplied

Table 2-11 through Table 2-13 list the equipment and accessories required but not supplied for the L-852G LED Runway Guard Light.

Table 2-11 Equip and Accessories Req’d - Not Supplied

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Can - L-868 (Load Bearing Type)</td>
<td>1</td>
</tr>
<tr>
<td>Isolation transformer for series circuit - L-830 or L-831</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2-12 Isolation Transformers w/o Arctic Kit - Not Supplied

<table>
<thead>
<tr>
<th>Plug Count</th>
<th>Series Circuit</th>
<th>Isolation Transformer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.6A</td>
<td>65W L-830-3 60 Hz / L-831-3 50 Hz</td>
</tr>
<tr>
<td>1</td>
<td>20A</td>
<td>Integro 20A to 6.6A, 65W</td>
</tr>
</tbody>
</table>

Table 2-13 Isolation Transformers w/Arctic Kit - Not Supplied

<table>
<thead>
<tr>
<th>Plug Count</th>
<th>Series Circuit</th>
<th>Isolation Transformer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.6A</td>
<td>100W L-830-4 60 Hz / L-831-4 50 Hz</td>
</tr>
<tr>
<td>1</td>
<td>20A</td>
<td>Integro 20A to 6.6A, 100W</td>
</tr>
</tbody>
</table>
3. INSTALLATION

**WARNING**

Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

### 3.1 Introduction

This section of the manual contains general instructions for installation of L-852G LED Runway Guard Light at a typical site. Refer to the airport project plans and specifications for the specific installation instructions.

### 3.2 Unpacking

The equipment is shipped ready for installation. Handle equipment very carefully to prevent component damage. Unpack the carton upon receipt and check the contents and their condition. Note any exterior damage to the carton that may lead to detection of equipment damage.

### 3.3 Placement

Follow the FAA specifications and site plans when placing the light fixture.

### 3.4 Installation

This subsection provides installation instruction for the L-852G LED Runway Guard Light. See Figure 3-1.
Figure 3-1 L-852G Installation (Typical)
4. OPERATION

4.1 Introduction
This section of the manual describes the operational aspects of the L-852G LED Runway Guard Light. The following paragraphs outline the details on controls, indicators, and system operation. Turn-on and turn-off operations are described, along with notes regarding safety hazards, where necessary.

4.2 Modes of Operation
The L-852G LED Runway Guard Light are configured for and automatically detect and adapt to either 3 or 5 Step 6.6A Constant Current Regulator (CCR).

4.3 Brightness Settings
Set the CCR to the desired brightness level.

4.4 Turn On and Checkout Procedure
Turn on the lights using the CCR.

4.5 Operating Modes
The L-852G LED Runway Guard Light will automatically switch between intensities depending upon the current from the CCR. There is no user interface to control light intensities.

4.6 Checkout
To checkout L-852G LED Runway Guard Light, turn on the CCR, step through the brightness levels, and observe intensity change of lights.

4.7 Equipment Shutdown
Turn off the lights by turning off the CCR.
5. MAINTENANCE

5.1 Introduction

This section of the manual lists the maintenance tasks required for the L-852G LED Runway Guard Light. This includes performance checks, on-site maintenance, and off-site maintenance. The performance checks and maintenance tasks in this section are required to ensure optimum equipment performance.

5.2 Maintenance Checks

Anti-seize compound should be used on 18-8, 410, or 416 stainless steel hardware.

Table 5-1 lists the maintenance checks. To keep the L-852G LED Runway Guard Light operating efficiently, follow a preventive maintenance schedule. Refer to FAA AC 150/5340-26 for more detailed information.

<table>
<thead>
<tr>
<th>Interval</th>
<th>Task</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>As Req’d</td>
<td>Check Lens for obstructions</td>
<td>Clean Lens</td>
</tr>
<tr>
<td>Weekly</td>
<td>Check for Rubber and other contaminant deposits on the lens</td>
<td>Clean lens</td>
</tr>
<tr>
<td>Bi-Monthly</td>
<td>Check Bolt Torque</td>
<td>The torque of the bolts attaching the light to its base should be checked</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 185 in/lbs Dry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 160 in/lbs w/ Anti-seize compound (Loctite 51609 HD).</td>
</tr>
<tr>
<td>Semi-Annually</td>
<td>Check the shallow base installations for the presence of water</td>
<td>Any water should be removed and the base should be sealed to prevent its reentry.</td>
</tr>
<tr>
<td>Unscheduled</td>
<td>Prepare for heavy snowfall, if necessary</td>
<td>Use red flags or sticks to mark location of fixtures to facilitate snow removal and lessen chance of damage to fixtures</td>
</tr>
</tbody>
</table>

NOTE
6. TROUBLE SHOOTING

6.1 Introduction
This section of the manual provides onsite corrective procedures in order to diagnose, isolate, and repair malfunctions and faults that may be found in the L-852G LED Runway Guard Light in its operational environment. Field repair is limited to the replacement of easily replaceable components.

6.2 Equipment Required
The following equipment is required to perform the onsite corrective maintenance procedures:
- Standard tool kit
- Cover Puller and Eyebolts
- Multi-meter

6.3 Troubleshooting Procedures
The L-852G LED Runway Guard Light must be operated as described in Section 4. When a fault or malfunction occurs, corrective maintenance is required by an onsite technician to isolate and correct the problem. The following items should be checked/verified before other troubleshooting/maintenance procedures are performed:
- Check all cables are connected
- Check all power connections are intact

If the above do not correct the malfunction, refer to Table 6-1.

CAUTION

When removing and replacing the electronics module, handle with care to avoid damage to discrete components that can be caused by electrostatic discharge. To avoid voltage overload, make sure the power is turned off when the replacement of a module is required.
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED(s) not lighting</td>
<td>Defective LED</td>
<td>Replace Light Engine</td>
</tr>
<tr>
<td></td>
<td>Defective Driver PWA</td>
<td>Check voltage across E1 &amp; E2 on the Driver PWA using a multimeter. When powered &amp; the Light Engine connected, a waveform should be present with rms value reading from 1.5 to 2.5 Vrms &amp; peak to peak value reading from 20-40V.</td>
</tr>
<tr>
<td></td>
<td>Loose wire connection</td>
<td>Tighten wire connections.</td>
</tr>
<tr>
<td></td>
<td>Deteriorated wire insulation</td>
<td>Replace wires.</td>
</tr>
<tr>
<td></td>
<td>Internal components wired incorrectly</td>
<td>Ensure components are connected per 7.3.20.</td>
</tr>
<tr>
<td>LED too dim</td>
<td>Dirty lens</td>
<td>Clean lens</td>
</tr>
<tr>
<td>LED(s) appear brighter/dimmer than other fixtures around it</td>
<td>Service life of LED exceeded</td>
<td>Replace Light Engine</td>
</tr>
<tr>
<td>Ice forming on lens (Optional Arctic Kit Installed)</td>
<td>Defective arctic kit (Heater PWA)</td>
<td>Verify jumper present on J4. Disconnect J1 from Heater PWA; leave other end connected to Driver PWA. Power the unit, if the light does not come on, see “LED(s) not lighting section” above. If the lights are on, measure the voltage across Pins 1 and 2 on the loose end of the cable. If 5VDC present replace Heater PWA, if no voltage present, replace Driver PWA.</td>
</tr>
<tr>
<td></td>
<td>Defective Heater</td>
<td>Check Heater with Ohmmeter. With Heater disconnected from Heater PWA, Heater should measure 0.5-1 ohm. If Heater measures higher, or open, replace heater.</td>
</tr>
<tr>
<td>Water/Excessive Moisture in 852 Light Fixture</td>
<td>Defective O-Ring</td>
<td>Replace O-Ring</td>
</tr>
<tr>
<td></td>
<td>Schrader Valve/Tuff seal not properly installed/teflon tape around threads not properly applied</td>
<td>Re-apply teflon tape around threads on Schrader valve/tuff seal.</td>
</tr>
</tbody>
</table>
7. REPAIR

7.1 Introduction

This section of the manual provides maintenance personnel with step-by-step instructions for performing the maintenance procedures. It also lists the maintenance tasks required for the L-852G LED Runway Guard Light.

These repair procedures will only show one configuration and are typical for the other configurations.

7.2 Repair Procedures

These instructions consist of the procedures required for testing, measuring, aligning, and repairing the L-852G LED Runway Guard Light. The tools and test equipment necessary for the performance of these procedures are also listed as required.

7.2.1 Visual Operational Check

1. With the system operating, visually inspect each L-852G LED Runway Guard Light to verify LEDs are on.
2. Visually inspect each L-852G LED Runway Guard Light for obvious damage.

7.3 Maintenance

The following maintenance procedures are those required to perform the maintenance tasks listed in Section 5.

7.3.1 Line-of-Sight Inspection

1. Visually inspect the lights for obstructions.
2. Refer to FAA specification AC 150/5340-24 for visibility requirements.

7.3.2 Lens and Cover Cleaning and Inspection

1. Inspect the lens, cover, and other visible parts for rubber build-up, moisture, dirt, etc.
2. Clean the outer lens.
3. Replace any damaged parts.

7.3.3 L-852G Light Fixture Removal From Base Can

1. Turn off CCR.
2. Remove six (6) bolts and washers, from cover. See Figure 7-1.
3. If required to pull L-852G light fixture out of the base can, install two (2) eyebolt screws into the two (2) threaded holes on the cover, insert a bar through the eyebolts, and lift the light fixture out of the base can with the lifting bar. See Figure 7-2.
High Voltage may be present from the Isolation Transformer and arcing may occur if the plug is disconnected without turning off power first. Ensure power from CCR to Isolation Transformer is OFF.

4. Disconnect the L-852G light fixture plug from the isolation transformer in the base can. If installed, disconnect the grounding wire from the grounding lug, see Figure 7-10.

![Diagram of L-852G fixture](image_url)

**Figure 7-1 Removal/Installation of L-852G Fixture from Base Can**
7.3.4 Access To Internal Components

1. Remove L-852G light fixture from base can per 7.3.3.

See Figure 7-3.

**CAUTION**

ESD practices must be followed when any maintenance is performed on the internal components of the L-852G light fixture.

**CAUTION**

Use caution when placing the light fixture upside down as not to damage the lens on the top of the casting.
2. Place L-852G light fixture upside down on a clean dry surface that will not damage the lens on top of the casting.

3. Remove six (6) bolts and washers connecting base casting to cover.

**NOTE**

The connectors must be disconnected from the LED PWA to the Driver PWA and Heater (if installed) when separating the Cover from the Base Casting. There is enough service loop wire to place the Cover and Base Casting alongside each other.

4. Separate Cover from Base Casting.
5. Disconnect Light Engine Assy and Heater (if installed) connector(s) from Driver PWA and Heater PWA.

Figure 7-3 Access To Internal Components
7.3.5 Cover O-Ring Removal

1. Gain access to internal components per 7.3.4.
2. Remove O-Ring from channel in Cover. See Figure 7-4.

Figure 7-4 Cover - Components

7.3.6 Light Engine Assy Removal

These repair instructions and figures only describe and illustrate the removal and installation of one light engine.

1. Gain access to internal components per 7.3.4.
2. Remove two (2) screws and remove Light Engine Assy from Cover. See Figure 7-5 and Figure 7-6.
Figure 7-5 Light Engine Assy Removal

Figure 7-6 Light Engine Assy
7.3.7 Prism (Lens), Prism Seal and Heater (If Installed) Removal

NOTE

These repair instructions and figures only describe and illustrate the removal and installation of one prism and heater.

1. Remove Light Engine Assy per 7.3.6.
2. Remove two (2) screws from back plate and remove along with prism spacer or heater from Cover.
3. Remove Prism and Prism Seal from the Cover. See Figure 7-7 and Figure 7-8.

Figure 7-7 Prism (Lens) and Prism Seal
7.3.8 Driver PWA Removal

1. Gain access to internal components per 7.3.4.
2. If no Arctic Kit installed go to step 3, if installed go to step 4.
3. If no Arctic kit, disconnect two (2) wires coming from Isolation Transformer plug to the Driver PWA(s). Go to step 8.
4. If Arctic Kit installed, disconnect one (1) wire coming from Isolation Transformer plug to the Driver PWA and the other from the Heater PWA. See Figure 7-9.
5. If Arctic Kit installed, remove Heater PWA; see 7.3.9.
6. Disconnect connectors from Driver PWA to Heater PWA.

7. Remove two (2) mounting screws and washers from Driver PWA to base casting and remove from base casting.
8. If no Arctic Kit installed, remove four (4) mounting screws and washers from Driver PWA to base casting and remove from base casting.
7.3.9 L-852G Heater PWA Removal (If installed)

1. Gain access to internal components per 7.3.4.
2. Disconnect wire coming from Isolation Transformer and heaters and connector(s) from the Driver PWA. See Figure 7-9.
3. Remove four (4) mounting screws, washers, and spacers from Heater PWA and remove Heater PWA.

7.3.10 2 Hole Tuff Seal Removal (with L-823 Power Cable)

NOTE

These repair instructions and figures only describe and illustrate the removal and installation of a single 2 Hole Tuff Seal.

1. Gain access to internal components per 7.3.4.
2. Disconnect two (2) wires coming from Isolation Transformer plug to the Driver PWA and/or Heater PWA. See Figure 7-9 and Figure 7-10.
3. Unscrew Plug from Base Casting and remove.
7.3.11 Schrader Valve Removal

1. Do steps 1 and 2 of 7.3.4.
2. Unscrew Schrader Valve from Base Casting and remove. See Figure 7-10.

7.3.12 Installation And Closing Access To Internal Components

The below paragraphs describe the installation of the internal components and the installation of the light fixture into the base can.

7.3.13 Schrader Valve Installation

See Figure 7-10.

1. Apply Teflon tape around threaded end of the Schrader Valve.
2. Install Schrader Valve Plug into Base Casting, add Loctite 51609 HD to the threading and torque to 20 inch pounds.
3. If other component(s) were removed, install component(s) per appropriate procedure.
4. Install Cover onto Base Casting per 7.3.20.
5. If no other component(s) were removed, and Cover and Base Casting were not separated, do 7.3.21.
7.3.14 2 Hole Tuff Seal Installation (with L-823 Power Cable)

See Figure 7-9 and Figure 7-10.

NOTE

These repair instructions and figures only describe and illustrate the removal and installation of one 2 Hole Tuff Seal.

1. Apply Teflon tape around threaded end of 2 Hole Tuff Seal.
2. Feed wire into Base Casting.
3. Install Plug into Base Casting and add Loctite 51609 HD to the threading. Tighten til hand tight, then an additional ¼ turn.
4. If other component(s) were removed, install component(s) per appropriate procedure.
5. Connect two (2) wires to Driver PWA and/or Heater PWA.
6. Install Cover onto Base Casting per 7.3.20.
7. If no other component(s) were removed, install Cover onto Base Casting per 7.3.20.

7.3.15 L-852G Heater PWA Installation (If installed)

See Figure 7-9.

1. Position Heater PWA in Base Casting and install four (4) spacers, mounting screws, and washers.
2. Torque screws to 5 inch pounds.
3. Connect wires coming from Driver PWA, heaters, and Isolation Transformer.
4. If other component(s) were removed, install component(s) per appropriate procedure.
5. If no other component(s) were removed, install Cover onto Base Casting per 7.3.20.

7.3.16 Driver PWA Installation

See Figure 7-9.

NOTE

These repair instructions and figures only describe and illustrate the removal and installation of one Driver PWA.
1. Position Driver PWA, in Base Casting. Install four (4) spacers, mounting screws, washers on Driver PWA through the mounting holes, add Loctite 51609 HD to the threading and torque screws to 15 inch pounds.
2. Install Heater PWA (if installed) per 7.3.15.
3. Connect wire(s) coming from Isolation Transformer and Heater PWA (if installed).
4. Ensure Dip Switches are set properly per Figure 7-11.

![Driver PWA Dip Switch Setting](image)

<table>
<thead>
<tr>
<th>L-852G 60 Hz</th>
<th>1</th>
<th>2</th>
<th>NEUTRAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1 SETTINGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW1-1</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>SW1-2</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>SW1-3</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>SW1-4</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L-852G 50 Hz</th>
<th>1</th>
<th>2</th>
<th>NEUTRAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1 SETTINGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW1-1</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>SW1-2</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td>SW1-3</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>SW1-4</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

Figure 7-11 Driver PWA Dip Switch Setting

5. If other component(s) were removed, install component(s) per appropriate procedure.
6. If no other component(s) were removed, install Cover onto Base Casting per 7.3.20.

7.3.17 Prism (Lens), Prism Seal & Heater (If Installed) Installation

See Figure 7-7 and Figure 7-8.

NOTE

These repair instructions and figures only describe and illustrate the removal and installation of one prism and heater.
1. Coat inside of Prism Seal with light coat of soapy water and insert Prism Seal into Cover.
2. Insert Prism into Prism Seal. Ensure Prism Seal is even around the edge of the Cover.
3. Clean Prism lens.
4. Position prism spacer or heater and back plate (ensure top edge of back plate is in chamber in Cover) on Cover over Prism. Install two (2) screws and tighten to 18 inch pounds.
5. If heater is installed apply a generous bead of RTV around the wire neck of the heater.
6. Install Light Engine Assy per 7.3.18.

7.3.18 Light Engine Assy Installation

See Figure 7-5 and Figure 7-6.

**NOTE**

These repair instructions and figures only describe and illustrate the removal and installation of one light engine.

1. Position Light Engine Assy on Cover.
2. Install two (2) screws through Light Engine Assy to Cover. See Figure 7-12 for positioning the Light Engine LED. Also see Figure 7-5 and Figure 7-6.
3. Plug Light Engine wire onto Driver PWA.
4. Add Loctite 51609 HD to the threading. Tighten screws to 9 inch pounds.
5. If no other component(s) were removed, install Cover onto Base Casting per 7.3.20.

![Image showing the position of screws in LED Holder](image-url)

Figure 7-12 Light Engine Installation
7.3.19  Cover O-Ring Installation

See Figure 7-4.

1. Position O-Ring into channel in Cover (a light coating of silicone grease may be used on the seal to hold the O-Ring in place and for conditioning).
2. If other component(s) were removed, install component(s) per appropriate procedure.
3. If no other component(s) were removed, install Cover onto Base Casting per 7.3.20.

7.3.20  Cover onto Base Casting Installation

See Figure 7-3.

ESD practices must be followed when any maintenance is performed on the internal components of the L-852G Light Fixture.

Use caution when placing the light fixture upside down as not to damage the lens on the top of the casting.

Ensure the service loop wire from the Light Engine Assembly to the Driver PWA and Heater (if installed) is not pinched between the Cover and Base Casting.

1. Place the L-852G Cover upside down on a clean dry surface that will not damage the lens on top of the casting.

Connections of all components are detailed below although all components and wiring may not have been disconnected to perform maintenance. Use only steps needed below to connect components and verify other components are connected properly.
2. Using the Part Numbering scheme in Figure 7-13, determine which light is being assembled and go to the appropriate steps to connect the wiring.

L852G-L-Y-1-1-0 Initial Flash On / 60 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-2-1-0 Initial Flash Off / 60 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-N-1-0 Locally Monitored / 60 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-1-1-1 Initial Flash On / 60 Hz / Arctic Kit - go to step 11.

L852G-L-Y-2-1-1 Initial Flash Off / 60 Hz / Arctic Kit - go to step 11.

L852G-L-Y-N-1-1 Locally Monitored / 60 Hz / Arctic Kit - go to step 11.

L852G-L-Y-1-2-0 Initial Flash On / 50 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-2-2-0 Initial Flash Off / 50 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-N-2-0 Locally Monitored / 50 Hz / No Arctic Kit - go to step 3.

L852G-L-Y-1-2-1 Initial Flash On / 50 Hz / Arctic Kit - go to step 11.

L852G-L-Y-2-2-1 Initial Flash Off / 50 Hz / Arctic Kit - go to step 11.

L852G-L-Y-N-2-1 Locally Monitored / 50 Hz / Arctic Kit - go to step 11.
3. See Figure 7-14. Connect Isolation Transformer cable (PC) connectors to E1 and E2 on the Driver PWA.
4. Connect the connectors from the Light Engine Assys (LED PWAs) to J2 & J3 on the Driver PWA.
5. Set board dip switch (SW1) per Figure 7-11.
6. Position the Cover on the Base Casting.
7. Install six (6) bolts, washers, add Loctite 51609 HD to the threading, securing base casting to cover.
8. Torque bolts to 20 inch pounds using a ‘star’ pattern
9. Do leak check per 7.3.21.
10. Install L-852G light fixture in base can per 7.3.22.
11. See Figure 7-15. Connect one of the Isolation Transformer cable (PC) connectors to E1 on the Driver PWA and the other Isolation Transformer cable (PC) connector to E1 on the Heater PWA.

12. Connect Power Jumper (PJ) wire assembly from E2 on the Driver PWA to E2 on the Heater PWA.

13. Connect Heater Control (HC) wire assembly from J1 on the Heater PWA to J1 on the Driver PWA.

14. Connect the connectors from the Light Engine Assys (LED PWAs) to J2 & J3 on the Driver PWA.

15. Connect one of the connectors from the Heater 1 (H1) wire to E4 on the Heater PWA and the other connector to the male connector of Heater 2 (H2) wire.

16. Connect the Heater 2 (H2) wire female connector to E3 on the Heater PWA.

17. Go to step 5.
7.3.21 L-852G Light Fixture Leak Check

After any maintenance on the fixture and prior to installation of the fixture into the base can, perform the leak check using the below steps.

1. Remove Schrader Valve cap.
2. Connect air source (nitrogen preferred or clean dry air) to the Schrader Valve and pressurize to 20 ±0.5 PSI. Disconnect air source.
3. Install Schrader Valve cap, add Loctite 51609 HD to the threading and torque finger tight.
4. Immerse fixture completely in a container filled with water and check for leaks.

7.3.22 L-852G Light Fixture Into Base Can Installation

1. Ensure CCR is OFF.

   ![WARNING]

   High Voltage may be present from the Isolation Transformer and arcing may occur if the plug is connected without shutting off power first. Ensure power from CCR to Isolation Transformer is OFF.

2. Connect the L-852G light fixture plug to the isolation transformer in the base can. See Figure 7-1. If installed, connect the grounding wire, see Figure 7-10.
3. Ensure the light is positioned correctly in relationship to the runway.
4. Install six (6) bolts, washers on cover to the base can.
5. Turn on CCR and perform check per 4.4.
8. PARTS

8.1 Introduction

This section of the manual contains the source data of all electrical and selected mechanical replacement parts of the L-852G LED Runway Guard Light, shown in Table 8-1 & Figure 8-1. Renewal parts are shown in Table 8-2.

8.2 Ordering Information

Use the part numbering scheme in 8.2.1 to order the fixtures and the information in Table 8-2 to order renewal parts.

8.2.1 L-852G LED Runway Guard Light Part Number

```
L852G-L-X-X-X-X
```

- **FIXTURE TYPE**
- **LED**
- **Y= Yellow**
- **1= Initial Flash On**
- **2= Initial Flash Off**
- **N= Locally Monitored**
- **1= 60Hz**
- **2= 50Hz**
- **0= No Arctic Kit**
- **1= Arctic Kit**
Figure 8-1 L-852G LED Runway Guard Light

NOTE: Grounding Lug is located on side not depicted. This Image is for illustrative purposes ONLY.
Table 8-1 L-852G Parts List

Note: The following components and their part numbers are shown for reference only. Table 8-2 lists the only parts available for purchase.

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Name/Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 8-1</td>
<td>L-852G LED RUNWAY GUARD LIGHT</td>
<td>See para 8.2.1</td>
</tr>
<tr>
<td>1</td>
<td>BASE, L85X (1-hole)</td>
<td>A1-17-1064-002</td>
</tr>
<tr>
<td>2</td>
<td>COVER, 2 WINDOW, L-852G</td>
<td>A1-17-1132-001</td>
</tr>
<tr>
<td>3</td>
<td>SEAL, RUBBER, PRISM, L85X UNI-BI</td>
<td>A1-25-0091-001</td>
</tr>
<tr>
<td>4</td>
<td>PRISM, L852G</td>
<td>A1-32-0026-001</td>
</tr>
<tr>
<td>5</td>
<td>BACK PLATE, PRISM, 85X UNI-BI</td>
<td>A1-17-1065-001</td>
</tr>
<tr>
<td>6</td>
<td>SPACER, PRISM, UNI-BI (used without heater)</td>
<td>A1-18-2169-001</td>
</tr>
<tr>
<td>7</td>
<td>O-RING, EPDM, 8.73 ID X 9.0 OD, 1/8” THK</td>
<td>AS568A-269</td>
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<td>8</td>
<td>TUFF SEAL, RSR SERIES, 2 HOLE</td>
<td>A1-05-0552-001</td>
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<td>9</td>
<td>VALVE, AIR, SCHRADE, 1/8”</td>
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<td>10</td>
<td>CAP, VALVE, AL, GREEN ANODIZED</td>
<td>A1-05-0561-001</td>
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<td>11</td>
<td>POWER CABLE, L-823</td>
<td>10518-101-001</td>
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<td>12</td>
<td>PWA, DRIVER, L-852G</td>
<td>A3-07-1159-001</td>
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<td>13a</td>
<td>LIGHT ENGINE ASSY, L-852G</td>
<td>A3-06-3161-001</td>
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<tr>
<td>13b</td>
<td>LIGHT ENGINE ASSY, L-852G</td>
<td>A3-06-3161-010</td>
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<td>14</td>
<td>PWA, HEATER, DUAL BD, L-85X, UNI</td>
<td>A3-07-1107-001</td>
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<td>15</td>
<td>CON, FAST RECEP, INSUL</td>
<td>A1-03-0260-001</td>
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<td>16</td>
<td>HEATER, SILICONE, L85X, M/F</td>
<td>A1-01-0162-002</td>
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<td>17</td>
<td>WIRE ASSY, HEATER (used with Heater)</td>
<td>A3-06-3105-003</td>
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<td>18</td>
<td>LUG, GROUNDING, LAY-IN (not shown)</td>
<td>A1-04-0241-001</td>
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<tr>
<td>Used On</td>
<td>Part Name/Description</td>
<td>Part Number</td>
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<td>Figure 8-1</td>
<td>L-852G LED Runway Guard Light</td>
<td>See paragraph 8.2.1</td>
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<td>Replacement Kit, L-85X, L-823 Cable – Includes:</td>
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<td>Power Cable, L823 - 10518-101-001</td>
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<td>Tuff Seal 2 Hole - A1-05-0552-001</td>
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<td>Connectors - A1-03-0260-001</td>
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<td>852G</td>
<td>Replacement Kit, Prism, L-852A-D, G &amp; S – Includes:</td>
<td>K1-02-0029-001</td>
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<td>Prism – A1-32-0026-001</td>
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<td>Prism Seal – A1-25-0091-001</td>
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<td>Prism Spacer – A1-18-2169-001</td>
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<td>Back Plate, Prism– A1-17-1065-001</td>
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<td>O-Ring – AS568A-269</td>
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<td>PWA, Heater – A3-07-1107-001</td>
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<td>Wire Assy, Power Jumper Wire – A3-06-3105-003</td>
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<td>Wire Assy, Heater Control Wire - A3-06-3105-004</td>
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<td>Heater, Silicone, L85X, F/F – A1-01-0162-001</td>
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<td>852G</td>
<td>Kit, Ground Lug - Includes:</td>
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<td>Lug, Grounding Lay-in - A1-04-0241-001</td>
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<td>Screw, Pan PHH, Cres, #10-32 x .500 - MS51958-63</td>
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<td>LKWash, Ext T, Cres, .195 x .410, .025 THK- MS35335-60</td>
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